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Resent tectonic and slumping processes in the Central Indian Ocean Basin (CIOB)

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It is widely known, that the North-Eastern Indian Ocean is the unique intraplate tectonically active zone within the Indo-Australian plate (Weissel et al., 1980; Neprochnov, Gopala Rao et al., 1998) or diffuse plate boundary between the Indian, Capricorn and Australian plates (Royer and Gordon, 1997). The enormous zone is occupying the northern part of the Central Indian and Wharton Basins and Ninetyeast Ridge. In order to understand better the intraoceanic diffuse convergent processes, we compiled new tectonic schemes for three polygons in the vicinity of the Afanasy Nikitin Seamounts in CIOB, where Shirshov Institute of Oceanology carried out detailed geophysical surveys. New conclusions about structural pattern of the zone were obtained from reinterpretation of detailed reflection data. (1) Recent Late Miocene-Quaternary roughly E-W striking compressive features (folds and high-angle reverse faults) are often superimposed on the ancient Late Cretaceous N-S transform faults and sometimes shift them. (2) Recent ductile and brittle sinistral strike-slip movements were identified along the ancient transform faults in the Central Indian Basin similar to those in the Wharton Basin (Deplus et al., 1998). (3) Buried slumps within the upper Bengal fan sediments were recognized firstly in CIOB. The slumped sedimentary bodies are lying on surface of the regional Late Miocene unconformity "A" and covered by weakly deformed Pliocene-Quaternary sediments. We beleive, that the slumps were formed as a result of nearest anticline high disintegration in the Late Miocene. Thus, inner structure of upper sediments seems to be caused by multiphase compression events (e.g. Krishna et al., 2001) as well as by gravitational sliding processes. (4) As a result of comparison of seismic reflection profiles with Deep Seismic Sounding, new details of deep structure of the zone were revealed. Low-velocity zones near Moho boundary would be traced along the ancient transform faults. They are concen-

trated usually beneath the large anticline folds superimposed on the faults. This result agrees with suggestion that serpentinization of ultramafic rocks in lower crust and upper mantle could control partly recent tectonics of NE Indian Ocean (e.g., Verzhbitsky and Lobkovsky, 1993; Louden, 1995; Neprochnov et al., 2001). (5) General structural pattern of CIOB appears to evidence that the southern edge of Indian subcontinent (as "intraplate indenter") could control actively spatial distribution of the recent compressional features over CIOB. In general, new results are interesting for recognition of structure and evolution of the Central Indian Ocean deformation zone. The work was supported by MK-971.2005.5, RFBR no. 05-05-64685 and EU project no. 502247 (COMSHELFRISKS).